

$$\begin{array}{c}
 \text{NH}_2\text{---PEG---NH}_2 + \text{HOOC---CH}_2\text{---}\underset{\text{NH}}{\overset{|}{\text{CH}}}\text{---COOH} \\
 \qquad \qquad \qquad | \\
 \qquad \qquad \qquad \text{Boc} \\
 \downarrow \text{DIPC/DMAP/PTSA} \\
 \left(\text{NH---PEG---NH---C}(=\text{O})\text{---}\underset{\text{NH}}{\overset{|}{\text{CH}}}\text{---CH}_2\text{---C}(=\text{O}) \right)_n \\
 \qquad \qquad \qquad | \\
 \qquad \qquad \qquad \text{Boc} \\
 \downarrow \text{TFA} \\
 \left(\text{NH---PEG---NH---C}(=\text{O})\text{---}\underset{\text{NH}_2}{\overset{|}{\text{CH}}}\text{---CH}_2\text{---C}(=\text{O}) \right)_n
 \end{array}$$

Figure 1. Synthetic scheme of poly(ethylene glycol) derived copolymer with multiple amino groups for peptide attachment.

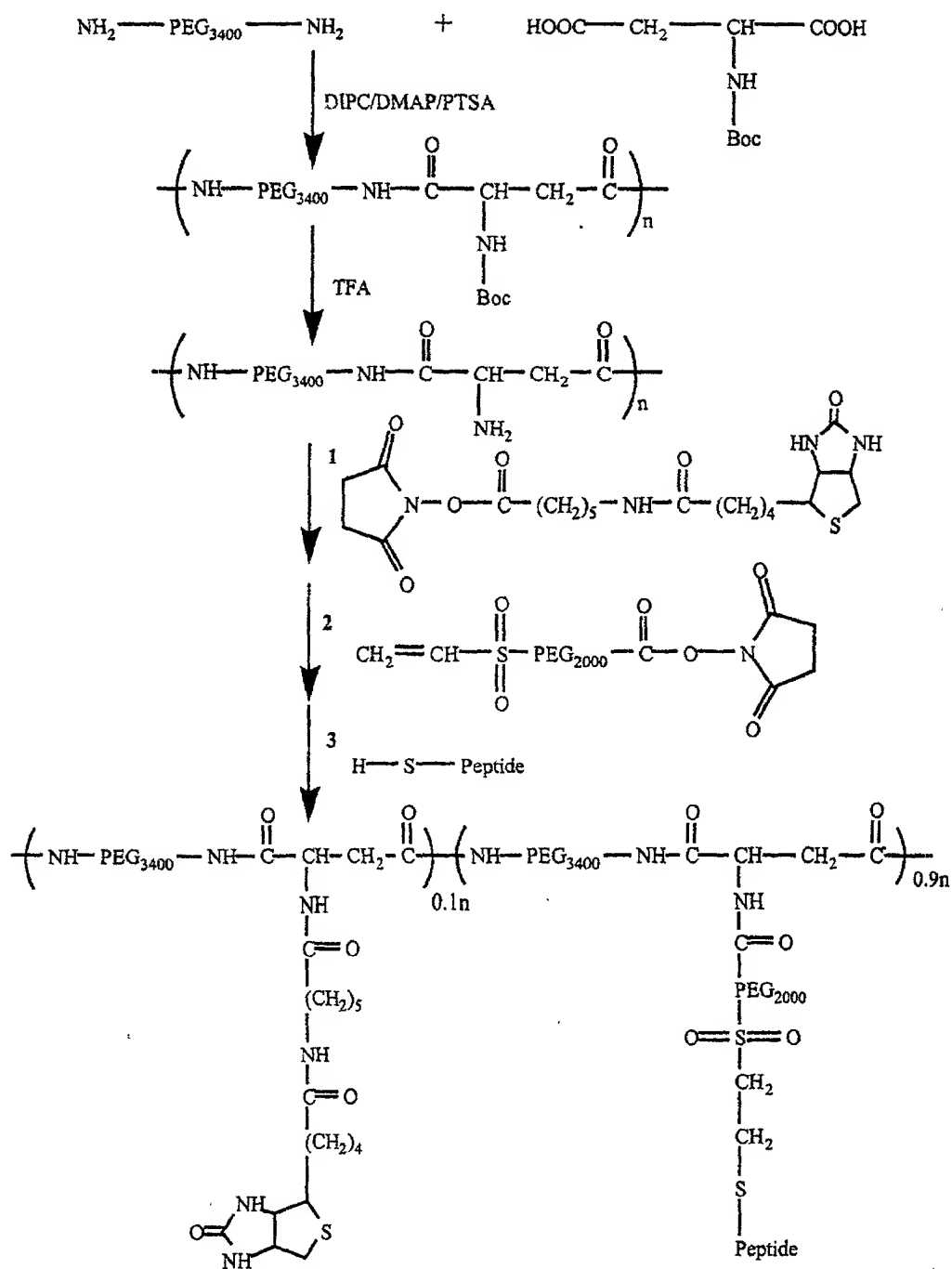


Figure 2. Synthetic scheme of PEG-peptide conjugates containing multiple copies of peptides and reporter molecules

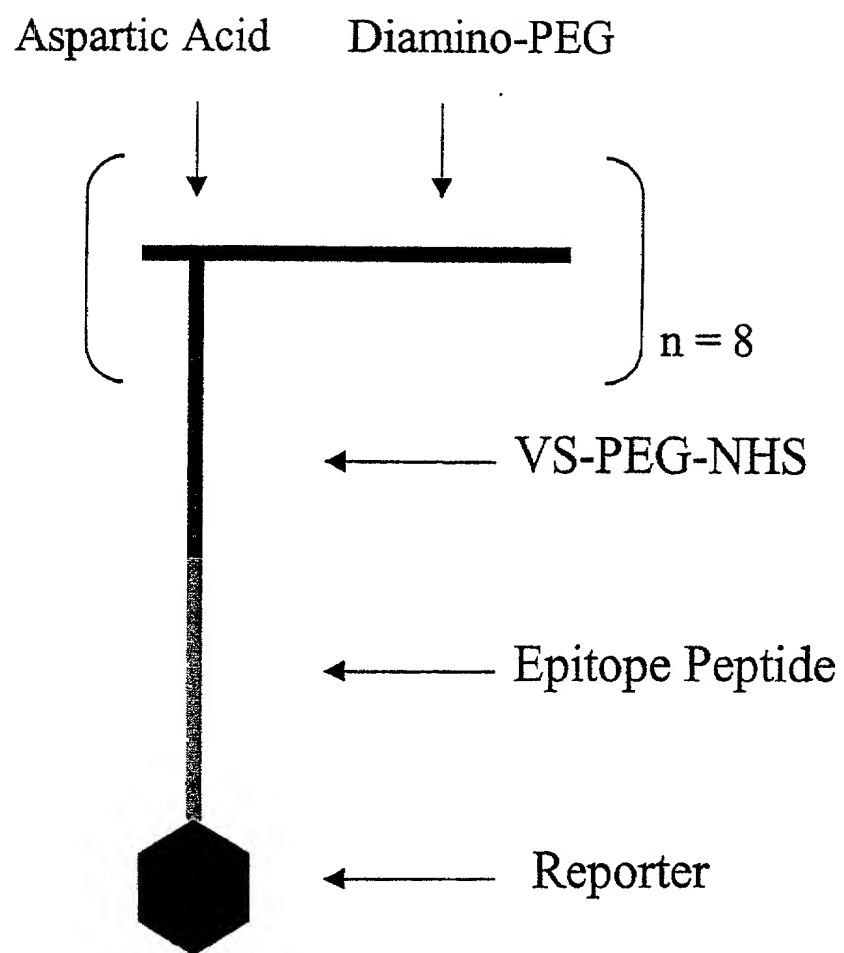
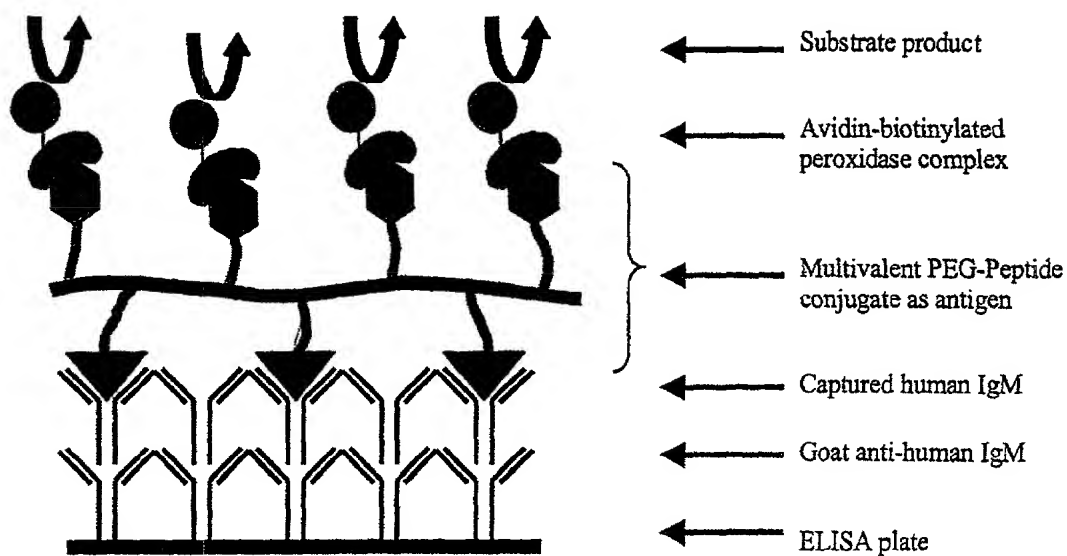


Figure 3. Schematic description of PEG-peptide conjugates with reporter group on the N-terminus of the peptide



 Biotin Reporter Molecules
  Epitope Peptides
  Polymer Chain

Figure 4. IgM-capture ELISA using PEG-peptide conjugate as antigen for serological diagnosis of Lyme disease